

Humidity Reference Cells

for
adjustment
and
calibration
of
humidity measuring instruments

Performance characteristics

- Reference cell for relative air humidity
- 7 versions with different salt fillings ranging from 11 % to 97 % RH
- High accuracy guaranteed by chemically straight salts
- Integrated Teflon membrane as separating barrier between salt solution and measuring chamber
- Optimized housing with favourable ratio of membrane surface to inner volume
- Transparent design for visual controlability of saturation and liquid level
- Temperature range from 0 to +50°C
- Made in Germany, 12 months warranty



Working principle

The humidity reference cells are used as humidity standards in order to provide stable humidity values for experiments or for calibration of measuring instruments. The achievable accuracy is within a deviation of 1 % RH.

The working principle is based on a saturated salt solution, that leads to a particular relative air humidity value prevailing directly above the solution.

The reference cells in addition contain a semi-permeable Teflon membrane (diaphragm) which separates the salt solution from the measuring area. The membrane is permeable for vaporous water molecules, but not for the salt solution or for liquid water. The humidity value in the measuring area corresponds to the relative air humidity above the salt solution. The membrane makes handling the cells much easier: the reference cells can be inserted upside down. There is no risk of the salt solution leaking out and thus spoiling the test item. Furthermore, the salt solution is protected against contamination coming from the outside. The active membrane area is rather large compared to the inside volume, which leads - after insertion of the test item - to quickly stabilizing humidity values.

The cells are mechanically stable and transparent. Thus, the humidity level and the air saturation can be monitored from the outside. The sensitive membrane is protected by a plastic insert. The humidity curve in dependence on the temperature can be seen on the label of the containers. Temperature ranges goes from 0 to +50°C.

Durability

When applied correctly, the cells can be used for many years. If the liquid level changes, just send in the cells to our customer service for regeneration or for a refill.

Versions

The version offered is equipped with a 1/2" inner thread that allows the compressed air probe or the instrument series FA 200 and FA 300 to be directly screwed in leak-proof. The reference cell is available with seven different salt solutions. The salts used are of the straightest laboratory quality. For an overview of the versions available, please refer to the back of this leaflet.

Further information can be made available upon request.

Fields of application

Due to the high accuracy, the reference cells are suitable for calibration of capacitive humidity measuring instruments. A service software, that makes adjustment and calibration with the measuring cell possible, is available for CS Messtechnik's instrument series FA 300. The order no. for the service software package is 0699.3399. The complete package does also include a interface module, a mains unit and a connecting cable.

Further fields of application are humidity generators and moisturizing equipment for research and development purposes.

Humidity curve

Filling, salt	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C
Lithium chloride	11.26	11.29	11.30	11.31	11.30	11.28	11.25	11.21	11.16	11.10
Magnesium chloride	33.60	33.47	33.30	33.07	32.78	32.44	32.05	31.60	31.10	30.54
Magnesium nitrate	58.86	57.36	55.87	54.38	52.89	51.40	49.91	48.42	46.93	45.44
Sodium chloride	75.65	75.67	75.61	75.47	75.29	75.09	74.87	74.68	74.52	74.43
Potassium chloride	87.67	86.77	85.92	85.11	84.34	83.62	82.95	82.32	81.74	81.20
Potassium nitrate	96	95	94	93	92	91	89	88	85	82
Potassium sulphate	98	98	97	97	97	96	96	96	96	96

Ordering information

Filling, salt	relative humidity at 20°C	Order no.	Annotation
Lithium chloride	11.31	0554.0002	standard, ex stock
Magnesium chloride	33.07	0554.0004	standard, ex stock
Magnesium nitrate	54.38	upon request	upon request
Sodium chloride	75.47	0554.0005	standard, ex stock
Potassium chloride	85.11	upon request	upon request
Potassium nitrate	93	upon request	upon request
Potassium sulphate	97	upon request	upon request

Dew point overview

Lithium chloride (LiCl)										
temperature	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C
relative humidity	11.26 %	11.29 %	11.30 %	11.31 %	11.30 %	11.28 %	11.25 %	11.21 %	11.16 %	11.10 %
dew point	-22.6 °tpd	-18.7 °tpd	-14.8 °tpd	-10.9 °tpd	-7.1 °tpd	-3.3 °tpd	0.5 °tpd	4.2 °tpd	7.9 °tpd	11.6 °tpd

Magnesium chloride (MgCl ₂)										
temperature	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C
relative humidity	33.60 %	33.47 %	33.30 %	33.07 %	32.78 %	32.44 %	32.05 %	31.60 %	31.10 %	30.54 %
dew point	-9.6 °tpd	-5.3 °tpd	-1.0 °tpd	3.3 °tpd	7.5 °tpd	11.7 °tpd	15.8 °tpd	19.9 °tpd	24.0 °tpd	27.9 °tpd

Sodium chloride (NaCl)										
temperature	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C
relative humidity	75.65 %	75.67 %	75.61 %	75.47 %	75.29 %	75.09 %	74.87 %	74.68 %	74.52 %	74.43 %
dew point	1.1 °tp	5.9 °tpd	10.7 °tpd	15.5 °tpd	20.3 °tpd	25.1 °tpd	29.9 °tpd	34.6 °tpd	39.4 °tpd	44.2 °tpd

Potassium chloride (KCl)										
temperature	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C
relative humidity	87.67 %	86.77 %	85.92 %	85.11 %	84.34 %	83.62 %	82.95 %	82.32 %	81.74 %	81.20 %
dew point	3.1 °tpd	7.9 °tpd	12.7 °tpd	17.4 °tpd	22.2 °tpd	26.9 °tpd	31.7 °tpd	36.4 °tpd	41.1 °tpd	45.9 °tpd

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